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ADVANCES IN BOUNCER PAN TECHNOLOGY

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Fuel containers for ICF targets have traditionally been fabricated using plasma polymer coating techniques. Bouncer pans have been employed to create random agitation of spherical mandrels to ensure a uniform coating thickness. Originally designed for Shiva size fuel capsules, the traditional internally mounted piezoelectric crystal, excited with random noise, has also been successful in bouncing Nova-size capsules.

The development of NIF capsule technologies has presented new challenges in bouncer technology. NIF capsule mandrels are significantly more massive than Nova capsules and require more vigorous agitation. The problem of increased mass was particularly severe during the early development of the decomposable mandrel technique when it was necessary to overcoat solid, 2 mm diameter poly(α-methylstyrene) beads. The other area that spurred new bouncer technology was our work on the plasma polymer coating of the very delicate low-density foam shells produced by microencapsulation techniques. In this case agitation needed to be more gentle to avoid damaging the shells.

New techniques have been developed to deal with these problems. We have found that vibrating from a source outside the coating chamber allows for more pan motion options. The pan can be vibrated in the horizontal or vertical plane with much greater amplitude. The rate at which the pan is vibrated can be reduced significantly to curb defects produced by the collision of mandrels as they are agitated. Additionally, a rolling pan option has been explored for reducing these collisions.

A poster will be presented demonstrating the damage caused by improper agitation and the improvements made by employing these new techniques.

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